THE USAMECOM-ERDL FUEL CELL ELECTRIC POWER GENERATION PROGRAM

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ABSTRACT

Electric power generation in both ground power and vehicular propulsion applications is of major interest to the Army. The goal of the ERDL R & D program is to develop a family of silent power sources in the 1.5 to 15 kw range. The goals for the fuel cell development program have been set on the basis of two generations of developmental models. A systems appraisal of fuel cell technology on the basis of fuels used demonstrates the comparative complexities. The research and engineering accomplishments achieved both under contract and in-house are indicative of the progress being made. The key to obtaining a satisfactory fuel cell is still the electrode. Present fuel cell status may be shown either by considering progress in the oxidation of fuels of increasing complexity or by a consideration of present levels of performance and improvement potential. The overall ERDL approach to achieving the desired family of silent power sources is illustrated by the research program and by tracing the development cycles of special fuel cells and hydrocarbons fuel cells. It is felt that ground power units will provide the enabling technology for many other fuel cell uses.